

EXPLANATION OF SIGNIFICANT DIFFERENCE
FOR THE WARM WASTE POND SEDIMENTS
RECORD OF DECISION
AT THE TEST REACTOR AREA
AT THE IDAHO NATIONAL ENGINEERING LABORATORY

BY

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I. INTRODUCTION

This document presents an Explanation of Significant Difference (ESD) from the decision document for interim remedial action for the Warm Waste Pond sediments, which was executed on or before December 5, 1991, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), and to the extent practicable, the National Oil and Hazardous Substance Pollution Contingency Plan (NCP). This ESD is also prepared in accordance with the December 1991 Federal Facility Agreement and Consent Order entered into between the United States Department of Energy Idaho Field Office, the state of Idaho, and the Environmental Protection Agency.

Site Name and Location:

Warm Waste Pond Sediments
Test Reactor Area
Idaho National Engineering Laboratory

The lead agency for this action is the United States Department of Energy Idaho Field Office. The state of Idaho concurs with, and the Environmental Protection Agency approves, the need for this significant change to the selected contingency remedy. The three agencies jointly participated in the preparation of this document.

This ESD, prepared in accordance with Section 117(c) of CERCLA and NCP Section 300.435(c)(2)(i), is necessary to address needed modifications to the contingency remedy identified in the Warm Waste Pond Record of Decision. This contingency is being implemented as a result of the findings of the pilot-scale treatability study that chemical/physical treatment cannot achieve the goals expected in the December 1991 Record of Decision. However, the contingency remedy of placing a soil cover atop the pond sediments will be modified and implemented. The report documenting the findings of the Treatability Study, this ESD, and other relevant documents will become a part of the Administrative Record file pursuant to Section 300.825(a)(2) of the NCP.

Copies of this ESD and the Administrative Record are available to the public in the regional INEL information repositories:

INEL Technical Library in Idaho Falls, hours:	8:00 a.m.-7:00 p.m. Monday-Thursday 8:00 a.m.-5:00 p.m. Friday 9:00 a.m.-1:00 p.m. Saturday
Idaho Falls Public Library, hours:	9:00 a.m.-9:00 p.m. Monday-Thursday 9:00 a.m.-5:30 p.m. Friday, Saturday
Pocatello Public Library, hours:	10:00 a.m.-9:00 p.m. Monday-Thursday 10:00 a.m.-6:00 p.m. Friday, Saturday
Twin Falls Public Library, hours:	10:00 a.m.-6:00 p.m. Monday, Friday 10:00 a.m.-9:00 p.m. Tuesday, Wednesday, Thursday 12:00 p.m.-5:00 p.m. Saturday
Boise Public Library, hours:	10:00 a.m.-6:00 p.m. Monday, Friday 10:00 a.m.-9:00 p.m. Tuesday, Wednesday, Thursday 1:00 p.m.-5:00 p.m. Saturday
Idaho State Library, hours:	9:00 a.m.-5:00 p.m. Monday-Friday
University of Idaho Library, hours:	7:30 a.m.-10:00 p.m. Monday-Thursday 7:30 a.m.-5:00 p.m. Friday 1:00 p.m.-5:00 p.m. Saturday
Shoshone-Bannock Library, hours:	Call for hours

II. SITE HISTORY, CONTAMINATION PROBLEMS, AND SELECTED REMEDY

The Idaho National Engineering Laboratory (INEL) is located 32 miles west of Idaho Falls, Idaho and occupies 890 square miles of the northeastern portion of the Eastern Snake River Plain. The Test Reactor Area is located in the southwestern portion of the INEL (see Figure 1). TRA covers approximately a 1,700 by 1,900 foot area and is surrounded by a double security fence. The Warm Waste Pond is located approximately 200 feet east of TRA facility fence and consists of three wastewater infiltration/evaporation cells comprising approximately 4 acres.

The Warm Waste Pond consists of three cells; one excavated in 1952 with bottom dimensions 150 by 250 feet and a depth of 15 feet, one excavated in 1957 with bottom dimensions of 125 by 230 feet and a depth of 15 feet, and one excavated in 1964 with bottom dimensions of 250 by 400 feet and a depth of 6 feet. The Warm Waste Pond was proposed for an interim action under the Federal Facility Agreement/Consent Order because the pond sediments were found to pose an unacceptable risk when evaluated for potential future industrial and residential uses. The Record of Decision (ROD) documented the decision to perform the interim action. The remedy selected, physical separation/chemical extraction, represents a new and innovative technology for the remediation of contaminants of concern in the Warm Waste Pond sediments. As this was an untested technology, a pilot-scale treatability study was required to determine whether this technology could achieve the goals anticipated in the Proposed Plan and ROD (i.e., implementability, cost, and short-term effectiveness).

Evaluation of the data from past sampling efforts and the preliminary risk evaluation performed on these data served as the basis for the interim action. The contaminants which were predominately found in highest concentrations in the upper two feet of the sediments are shown in Table 1.

In order to address the risk to human health from the carcinogenic threat posed by the contaminants detected, physical/chemical treatment of the sediments was the selected interim remedial action. Alternatively, as this technology has not been successfully demonstrated, a contingency soil cover was provided for in the event the pilot-scale treatability study failed to demonstrate that the ROD objectives would be met through the physical/chemical treatment.

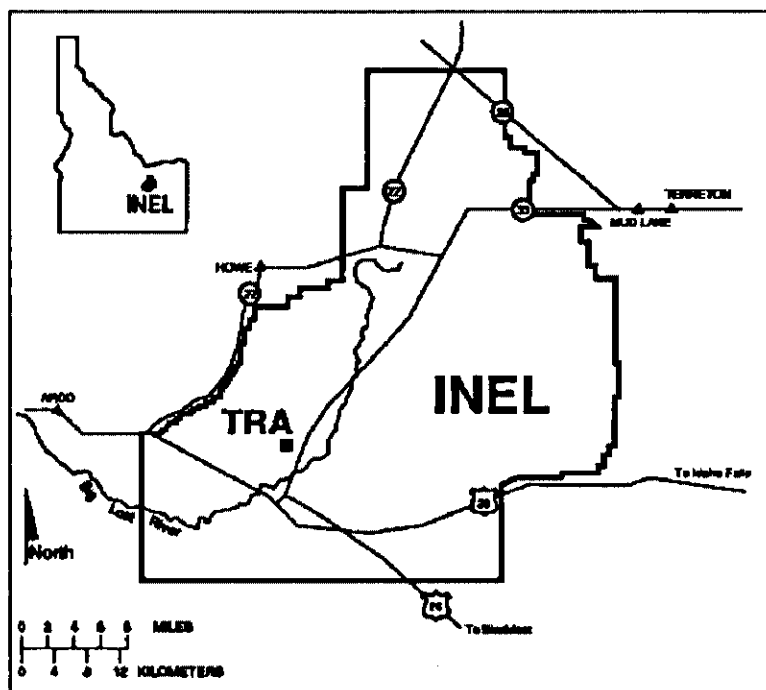


Figure 1: Test Reactor Area (TRA) at the Idaho National Engineering Laboratory (INEL)

TABLE 1: Primary contaminants found in Warm Waste Pond sediments

Contaminant	Average Concentration	Half-life
Radionuclides		
Cesium-137	11,500 pCi/gm (11.5 nCi/gm)	30.2 years
Cobalt-60	4620 pCi/gm (4.62 nCi/gm)	5.3 years
Non-Radionuclides		
Chromium	338 mg/kg	-
Zinc	143 mg/kg	-
Sulfide	28 mg/kg	-

III. DESCRIPTION OF SIGNIFICANT DIFFERENCES AND BASIS

The treatability tests performed in accordance with the Record of Decision (ROD) requirements involved sample characterization which included particle size distributions, radionuclide activity distributions, elemental distributions, scanning electron micrograph analysis, and crystalline analysis of samples. In addition, acid extraction testing, and treatment with other extraction liquids followed by precipitation, ion exchange, complexation/precipitation, and reverse osmosis were performed. The findings of this study showed that the goal of reducing cesium activity to less than 690 pCi/gm activity for the treated sediment returned to the pond would result in a dramatic increase in the amount of treatment residuals which could not be returned to the pond cells, resulting in the need for long term storage, as no disposal location had been identified. This increase in the amount of sediments requiring long-term storage would, therefore, result in a decrease in the short-term effectiveness of this physical/chemical treatment remedy. This increased storage would significantly elevate the project costs above the original estimates in the Proposed Plan. Further, the effectiveness of acid extraction was marginally achievable only under extremely rigorous (i.e., boiling acid and long retention times) conditions bringing into question the implementability of the project.

In accordance with Section XI of the ROD, a contingency soil cover is to be placed over the Warm Waste Pond to reduce the radiation field and mitigate the potential for blowing dust. The need for an infiltration barrier is not demonstrated and therefore, no cap is needed to meet this objective. The significant difference identified in this ESD from that required in the ROD is the transfer of contaminated sediment from the 1964 cell and consolidation into one or both of the 1952 and 1957 cells. The three cell's surface areas are approximately as follows: 1952 cell, 4,000 square yards; 1957 cell, 3,000 square yards, and 1964 cell, 11,000 square yards resulting in a total area of approximately 18,000 square yards. Reducing the overall surface area of

contamination from the three cells to the two smaller pond cells (i.e., reduction from 18,000 square yards to 7,000 square yards) results in an area reduction of over 60%. Excavation of the estimated 2 to 3 feet of highly contaminated material from the 1964 pond and subsequent backfilling with clean fill, should free this area for potential future uses.

Also, the contingency soil cover as stated in the ROD would be altered. As stated above, two to three feet of sediment above 690 pCi/g would be excavated and removed from the 1964 cell followed by backfilling it to grade. The 1964 cell should then be free for potential future uses. After consolidation of the contaminated sediments from the 1964 cell into the 1952 and 1957 cells, these two cells would still require a thin soil cover to reduce potential worker exposure to the radiation field and blowing dust. Ultimate completion of the 1952 and 1957 cells to grade would be achieved with other similar material deemed appropriate by the three agencies as suitable for fill. This action is expected to be initiated in the fall of 1993.

Current risk assumptions do not indicate a significant health or environmental impact from the site following completion of this interim action, however, the need for further remedial action will be addressed in the final Waste Area Group 2 Remedial Investigation/Feasibility Study, (WAG-wide RI/FS), scheduled to begin in July 1996.

IV. AFFIRMATION OF THE STATUTORY DETERMINATION

Considering the new information obtained from the pilot-scale treatability study demonstrating that the removal efficiency goals were not met, the need to implement the contingency soil cover, and the need to modify this contingency to address consolidation of sediments into the 1952 and 1957 cells, the Department of Energy, the Environmental Protection Agency and the state of Idaho each believe that the remedy remains protective of human health and the environment, complies with federal and state requirements that were identified in the ROD as applicable or relevant and appropriate to this remedial action at the time the time of this ESD, and is cost-effective. In addition, through consolidation of the sediments from the three cells to two, resulting in a greater than 60% reduction in the area of contamination, the revised remedy utilizes best available solutions and alternative treatment technologies to the maximum extent practicable for this site and is expected to be consistent with the final site remedy.

V. PUBLIC PARTICIPATION ACTIVITIES

This ESD has been noticed in the Post Register (Idaho Falls), Idaho State Journal (Pocatello), Times News (Twin Falls), Idaho Statesman (Boise), and Idahoan (Moscow). This ESD and the contents of the Administrative Record are available for public review. In addition to the Administrative Record on file for the Record of Decision, the Administrative Record for this action includes a copy of this ESD; relevant newspaper notices; "Test Reactor Area Warm Waste Pond Pilot-Scale Treatability Study Work Plan"; and "Draft Results of the Pilot-Scale Treatability Study for the Test Reactor Area Warm

Waste Pond" and supporting information. Preparations for this action will begin approximately 30 days after issuance of this ESD. Although modified from the original ROD, the selected remedy has not changed significantly in scope. Thus, a formal comment period will not be conducted. However, in the interest of providing adequate information to the public concerning this ESD, an informal public information meeting to discuss this ESD is scheduled for March 30, 1993 at the Ameritel Inn, 900 Lindsay Boulevard, in Idaho Falls at 7:00 p.m. Requests for additional information, either by telephone conference or in person, may be requested within 14 days of notice of issuance of this ESD by contacting:

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